

Appl. No. 10/710,939
Amdt. dated November 17, 2005
Reply to Office Action of October 20, 2005

AMENDMENTS TO THE SPECIFICATION:

Please replace paragraph 0085 with the following rewritten paragraph:

The illustrated conveyor 300 is a pneumatic conveyor and in this regard includes a multi-phase centrifugal compressing air system 306 in communication with the tubing 302 for supplying compressed air into the tubing 302 to entrain the particulate P and force the particulate-entrained air stream through the tubing 302. The system 306 is similar in many respects to the air induction system 10 described in detail above. However, the system 306 includes centrifugal compressors that are powered by any suitable power source (not shown), such as an electric motor or the like. Additionally, the system 306 includes a controller 308 that controls phasing of the compressors between series and parallel operating phases. The illustrated controller 308 includes a plurality of sensors 310 configured to sense pressure changes within the tubing 302. When a change in pressure is detected by one of the sensors 310, the system 306 preferably switches operating phases to counteract the pressure change. For example, the sensors 310 could be in communication with the valving of the fluid flow control assembly of the system 306 to cause the valves to open and close based on predetermined minimum or maximum pressure levels within the tubing 302. Alternatively, the controller 308 could include alarms (not shown) in communication with the sensors 308 that activate when the predetermined pressure levels are present. In response to the alarms, a user could manually operate controls (not shown) on the controller 308 to cause the valving to open and/or close. The illustrated system 306 preferably operates in parallel series during

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normal operation and phases to series parallel operation when the downstream pressure sufficiently changes. For example, when a clog in the tubing 302 occurs, such as at a bend in the tubing 302, the pressure upstream of the clog will significantly elevate and the pressure downstream of the clog will significantly drop off. The preferred sensors 310 communicate this information to the controller 308 which in turn phases the system 306 into series parallel operating phase to ramp up the boost output and force the clog to disperse or exit the tubing 302. Once the clog has been resolved, the pressure conditions return to normal and the system 306 returns to parallel series operation. The system could be variously alternatively configured and could be powered and controlled in any number of suitable ways.

Please replace the original Abstract with the following rewritten Abstract:

A multi-phase centrifugal supercharging system (10) constructed in accordance with the principles of a preferred embodiment of the present invention and configured for supplying compressed induction fluid to an engine (E) is disclosed. The illustrated air induction system (10) broadly includes a drive assembly (12) powered by the engine (E), a supercharging assembly (14) driven by the drive assembly (12) to compress induction fluid, and an induction fluid flow control assembly (16) in communication with the supercharging assembly (14) to control operation of the supercharging assembly (14) and cooperating therewith to deliver the compressed induction fluid to the intake manifold (IM) of the engine (E). The supercharging assembly (14) includes a pair of centrifugal superchargers (28 and 30) that are phased by the control assembly (16). The drive

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assembly (12) is a simple direct belt drive that continuously operates the superchargers (28,30) at a constant ratio relative to the rotation of the crankshaft (C). The flow control assembly (16) phases the superchargers (28,30) between multiple operating phases, including a series phase (172) and a parallel phase (176), to supply constant target boost to the intake (IM) over the entire rev range of the engine (E). An alternative air system (306) is also disclosed, in use with a pneumatic conveyor (300), that phases between normal series operation and parallel, clog-displacing operation.